IN THE CLAIMS

1-21. (Canceled)

22. (Currently amended) A method of measuring stress forces in refiners including a pair of refining discs juxtaposed with each other and forming a refining gap for refining material therebetween, said pair of refining discs including at least one refining surface including a plurality of bars for refining said material within said refining gap, said at least one refining surface including a measuring surface comprising a predetermined portion of said at least one refining surface including at least a portion of at least a pair of said plurality of bars, said method comprising resiliently mounting said measuring surface in said at least one refining surface and simultaneously measuring both the magnitude and direction of stress forces in the plane of said measuring surface, wherein said simultaneously measuring comprises measuring said stress forces in a first direction by means of a first force sensor and measuring said stress forces in a second direction by means of a second force sensor, said first direction being angularly displaced with respect to said second direction, and determining said magnitude and direction of said stress forces by measuring said stress forces in said first and second directions.

23. (Cancelled)

24. (Currently amended) The method of claim ~~23~~ 22 wherein said simultaneously measuring comprises measuring said stress forces in a first direction by means of a first pair of first sensors disposed opposite each other to provide counter-directed readings and measuring said stress forces in said second direction by means of a second pair of second sensors disposed opposite each other to provide counter-directed readings, said first pair of first sensors and said second pair of second sensors being disposed perpendicularly to each other.

25. (Previously presented) The method of claim 22 wherein said simultaneous measuring includes compensating for eccentric normal stress forces on said measuring surface.

26. (Previously presented) The method of claim 22 including measuring stress forces directed perpendicularly to said measuring surface.

27. (Previously presented) The method of claim 26 wherein said measuring of said stress forces directed perpendicularly to said measuring surface includes combining the force exerted by steam pressure inside said refiner and the force exerted by fiber pressure from said refining material.

28. (Previously presented) The method of claim 26 wherein said measuring of said stress forces directed perpendicularly to said measuring surface includes measuring the force exerted by fiber pressure from said refining material and compensating for the force exerted by steam pressure inside said refiner.

29. (Currently amended) The method of claim ~~23~~ 22 wherein said simultaneous measuring of both said magnitude and said direction of said stress forces in said plane of said measuring surface comprises calculating both said magnitude and direction from said first and second force sensors, and including controlling said refining process based thereon.

30. (Currently amended) Apparatus for measuring stress forces in refiners including a pair of refining discs juxtaposed with each other and forming a refining gap for refining material therebetween, said pair of refining discs including at least one refining surface including a plurality of bars for refining said material within said refining gap, said at least one refining surface including a stress measuring member comprising a measuring surface comprising a predetermined portion of said at least one refining surface including at least a portion of at least a pair of said plurality of bars, said stress measuring member being resiliently mounted in said at least one refining

surface and comprising at least a first set of force sensors for simultaneously measuring both the magnitude and direction of stress forces in the plane of said stress measuring member, wherein said first set of force sensors comprises a first force sensor for measuring said stress forces in a first direction and a second force sensor for measuring said stress forces in a second direction, said first direction being angularly displaced with respect to said second direction, whereby said magnitude and direction of said stress forces in said plane of said stress measuring member are determined from the readings of each of said first and second force sensors.

31. (Previously presented) The apparatus of claim 30 including compensating means for compensating for eccentric normal forces in said plane of said stress measuring member that will effect said measuring.

32. (Previously presented) The apparatus of claim 30 including an additional stress measuring member for measuring stress forces perpendicular to said stress measuring member.

33. (Cancelled)

34. (Currently amended) The apparatus of claim ~~33~~ 30 wherein said first set of force sensors includes a pair of said first force sensors for measuring said stress forces in said first direction and a pair of said second force sensors for measuring said stress forces in said second direction.

35. (Currently amended) The apparatus of claim 30 wherein said stress measuring member comprises a first body connecting said first set of force sensors to said stress measuring member, said first body comprising a first tubular resilient member disposed around the central axis of said stress measuring member, said first set of force sensors being disposed on said first ~~tabular~~ tubular resilient member.

36. (Previously presented) The apparatus of claim 30 wherein said stress measuring member includes a second set of force sensors.

37. (Previously presented) The apparatus of claim 36 wherein said stress measuring member comprises a second body connecting said second set of force sensors to said stress measuring member, said second body comprising a second tubular resilient member disposed around the central axis of said stress measuring member, said second set of force sensors being disposed on said second tubular resilient member.

38. (Previously presented) The apparatus of claim 37 wherein said second set of force sensors and said second body comprise compensating means for compensating for eccentric normal forces.

39. (Previously presented) The apparatus of claim 35 including an additional stress measuring member for measuring stress forces perpendicular to said stress measuring member, said additional stress measuring member comprising at least three force sensors disposed on said first tubular resilient member.

40. (Previously presented) The apparatus of claim 37 including an additional stress measuring member for measuring stress forces perpendicular to said stress measuring member, said additional stress measuring member comprising at least three force sensors disposed on said second tubular resilient member.

41. (Previously presented) The apparatus of claim 32 wherein said additional stress measuring member comprises means for measuring the stress force exerted perpendicular to said stress measuring member.

42. (Previously presented) The apparatus of claim 30 wherein said first set of force sensors comprise strain gauges.